SUSTAINABILITY IN INDIAN APPAREL INDUSTRY: AN ANALYSIS FROM THE PERSPECTIVE OF CONSUMERS AND DESIGNERS

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1.0 INTRODUCTION

Choice of apparel is often seen as a tool for self-expression, individuality and personal style. Extant literature and experts point out that “Fashion at its creative best is one of the most powerful and direct expressions of personal aspiration, individuality and belonging”. Clothing fulfils a need where its function is to provide with warmth, protection and express style and projects the image of an individual to the society and is also able to satisfy personal and social needs (Fletcher & Grose, 2012).

Apparel industry is a one of the most dynamic industry across the globe. The Indian apparel industry is estimated around 108 billion dollar and expected to reach 223 billion dollars by 2021. The industry employs over 45 million people directly to 60 million people indirectly. The Indian textile and apparel industry contribute approximately 5 per cent to India’s gross domestic product (GDP), and 14 per cent to overall Index of Industrial Production (IIP). The textile and apparel industry is also one of the largest contributor to India’s export with approximately 13.5 percent of total export amounting 42.24 billion dollars. (https://fashionunited.in)

The continuous growth of the global economy has caused significant environmental problems for the planet and eco-system (Wang, 2010). Although, textile and apparel industry has a prominent role in global economy, at the same time, it has been condemned as one of the most polluting industry having an inconsiderate effect on the environment and human health (Texprocil, 2018).Today, the industry is facing criticism due to huge amount of energy consumption, heat emission, water consumption and hazardous nature of various chemicals being used throughout from raw material extraction till disposal phase, and thus, disturbing the eco system (Pal, 2017a; Pal 2017b). As a result, Sustainability has become the need of the hour for survival of the mankind.

The term sustainability can be defined as meeting the needs of the present without compromising the needs of the future generations (Brundtland Report 1987). Over the years, concept of sustainability has expanded, and in today’s times, it is commonly regarded as the basis of three issues as Society, Environment and Economy; or in other words, it is regarded as a way of creating value for People, Planet and Profit (Thiele 2014).

The apparel industry has also been greatly influenced by the expansion of sustainability concept and the dynamics of the industry has changed both for the business side and consumer side. Cleaner production with less impact on the environment and producing less waste can create a value for *Planet*, safe and good working conditions can create a value for *People* and emerging new business models that represent the vision of sustainability can create *Profit* (Niinimäki 2013).

Thus, the concept of sustainability in apparel involves designing, manufacturing, logistics, retailing, consuming and disposal of products with the consideration of specifically environmental, social and economic impacts.

Accordingly, the consumers have also changed their preferences and are inclined towards environmental-friendly concepts and products. This shift in the consumer attitude has pushed the manufacturers and retailers to move towards the development of environmentally sustainable apparels to solve the environmental problem to some extent. Keeping such facts in mind, the purpose of this research study is to examine the awareness level of consumers' environmental concern, knowledge level of the impact of textile and apparel industry on environment and also investigates the influence of these, on consumers' attitudes towards environmentally sustainable apparels.

1.1 CONCEPT OF SUSTAINABILITY

Sustainability means to sustain life, all life, human, animal, vegetable & planetary. A self-sustaining system is a system that doesn't take more from the environment than it gives back, it is not depleting but sustain itself. Sustainability today, however, goes beyond just natural resources and can be categorized into ethical, political, social and economic dimensions unto which the principles of the term are built (Crane & Matten, 2007) (Goodstein, 2011). The triad necessary for sustainability lies in production, resource efficiency, and consumption (Nash, 2009). The manner of clothing disposal also impacts on its sustainability.

Sustainability has become synonymous with environmental activism and has become a movement of its own. The term was first introduced in 1987 when the World Commission on Environmental Development

explained that 'sustainable development is development that meets the needs of current generations without compromising the ability of future generations to meet their own needs' (Berfield, 2015). Therefore, a commitment to sustainability is a commitment to balancing the short and long-term supply and demand of resources

1.2 DIMENSIONS OF SUSTAINABILITY

Dimensions need to be in balance to more completely achieve the objective of sustainability. (Adams, 2016). Traditionally, the models of sustainability included three dimensions:

Environmental, Social, and *Economic* sustainability. However, in case of sustainable apparel design, these can be expanded. The new approach includes a five-dimension model for sustainable fashion by adding *Aesthetic*, and *Cultural* dimensions.

For example**,** *economic* sustainability cannot be achieved without *environmental* and *social* sustainability. Basically, the purpose of sustainability is to protect, sustain and enhance natural and human resources to ensure the future of humankind and nature (Wiese, 2015). Sustainability is not only environmental protection, but it is also ensuring that present human population is able to maintain their current standard of living and economic growth without violating health of people, animals and nature. (Portney, 2015).

Aesthetic sustainability is described as timelessness, durability and continuous attraction to an object such as a garment. Designing for sustainability in apparel must consider the sustainability of an individual's aesthetic experience. The cultural dimension of sustainability derives from the notion that concepts of sustainability generally fail to differentiate among cultural systems, value systems, norms, behaviors and ideas and does not recognize the differences in local economies and ecologies. *Cultural* sustainability involves a shifting of beyond the consideration of social ethics to an acknowledgement of the exploitation of labuor and resources.

1.3 SUSTAINABLE AND ETHICAL APPAREL

A sustainable approach to making, buying and using clothes is key to protecting the planet, as well as the lives of those involved in the creation of apparels and accessories.

The recent trend of fast fashion from an environmental point of view, which encourages a throwaway mentality is highly unsustainable. When it comes to cheap clothes, the true cost of fast fashion, when not paid by the end consumer, will most likely be paid for by the workers who make the garments in exchange for low wages and poor working conditions.

In contrast, sustainable fashion is a way of producing and buying (or not buying) clothing that considers environmental and other social concerns. These concerns can range from the fair treatment of workers to the use of organic cotton. For consumers, sustainable or ethical fashion is also about buying fewer, better quality garments that last longer.

The term 'sustainable fashion' typically stands for the same values as 'ethical fashion'. Sustainable clothing has been described as "clothing which incorporates one or more aspects of social and environmental sustainability, such as Fair-Trade manufacturing or fabric containing organically-grown raw material" (Goworek et al., 2012), but how consumers subsequently care for and dispose of clothing also contributes to its environmental impact. Up to 82% of the energy consumption associated with an item of clothing is attributable to its post-purchase laundering (Fletcher, 2008).

According to the Ethical Fashion Forum, "sustainable" or "ethical" fashion can be defined as "an approach to the design, sourcing and manufacture of clothing which maximizes benefits to people and communities while minimizing impact on the environment". (Green Strategy, 2017).

The defining characteristic of sustainable apparel are as follows:

- Sustainable fashion, also called eco apparel- to create a system which can be supported indefinitely in terms of environment and social responsibility;
- Sustainable apparel needs a balance between financial, social and environmental sustainability;
- Sustainable apparel part of the larger trend of sustainable design;
- Sustainable apparel appears not to be a short-term trend but one could last multiple seasons;
- The first challenge focuses on the wide variety of ways to practice sustainability;
- Use of renewable materials and/or non-harmful materials;

- Low-impact processes;
- Reuse or recycling of waste materials;
- A sustainable design will seek to incorporate environmental principles: Lower energy and water consumption through the entire lifecycle – from manufacture, to daily use and disposal; Minimize impact on climate change by reducing greenhouse gas emissions or mitigating them through carbon neutralizing activities;
- Limit resource consumption through waste-free manufacturing, a preference for renewable resources, and an emphasis on recycled materials;
- Reduce or eliminate waste by minimizing consumption, reusing when possible, and recycling when necessary; Minimize impact on the local ecosystem and look for ways to incorporate bio mimicry principles where possible; Give preference to non-toxic materials and those that will contribute to the health and wellbeing of humanity; Emphasize quality and durability over price.

Thus, Sustainable apparel considers all stages of the product life cycle -- clothing production (design, raw material production, manufacturing, transport, storage, marketing, final sale) as well as their afterlife (use, reuse, repair, remake, recycling, upcycling).

1.4 SUSTAINABILITY IN APPAREL INDUSTRY

The apparel industry has some major sustainability problems. By 2030, it is predicted that the apparel industry's water consumption will grow by 50% to 118 billion cubic meters, its carbon footprint will increase to 2,791million tons and the amount of waste it creates will hit

148 million tons(http://www.thefashionlaw.com). Excessive usage of apparels happens due to fast changing fashion trends, cheaper prices and continuous supply of new designs. The consumers tend to buy more due to affordable prices but dispose it after only after one season (Fletcher, 2008). Therefore, quick fashion contributes towards major waste disposal produced by the fashion industry. With increased production quantity, the volume of textile waste also increased drastically (Murray, 2002).

The apparel industry in general has undergone "intense scrutiny over economic, environmental and social impacts of the industry" (Kozlowski et al., 2004) such as its use of hazardous chemicals and non-renewable resources, generation of waste, and off-shore labour practices (Brigden et al., 2013). The Rana Plaza disaster in which a factory in Bangladesh collapsed, killing over 1000 workers and injuring thousands more, alerted fashion firms in the West to serious problems in supply chains in developing countries (Chandran, 2016). Another major issue is the "Detox" movement to eliminate toxic chemicals that permeate clothing during the production process ("The Detox Catwalk", 2016).

In response, many of these companies have taken steps to improve the levels of sustainability of their products by introducing board-level sustainable committees, sustainability policies, and sustainability reports. According to a report for the Retail Industry Leaders Association in 2012, sustainability is becoming a major consideration for the apparel industry, affecting strategy, operations, workforce engagement, and connections to consumers and communities (Siegel et al., 2012; see also Gonzalez, 2015; Black, 2016).

An important new approach to sustainability is the development of indexes which measure sustainability. **The Sustainable Apparel Coalition**, (SAC) a coalition of large retailers, clothing manufacturers, NGOs and government agencies, is attempting to develop a comprehensive database of the environmental effects of every manufacturer, component and process in apparel production with the aim of using that information eventually to give every garment a sustainability score (Zeller, 2011).

The coalition has developed a global sustainability index, **the Higg Index**, which measures energy use, greenhouse gas emissions, water consumption, chemical use and waste of apparel industry factories (Gunther, 2012). The Sustainability Coalition is developing sustainability measurements and reporting standards for many product categories. These initiatives will eventually provide the consumer with new and more precise types of information about specific products rather than broad generalizations as tends to be the case at the present time.

Recently, The Union Ministry for Textiles, Government of India, launched the Project **SU.RE** (Sustainability Response), on 22nd August, 2019, India’s biggest commitment towards sustainable

fashion. The project has been developed by the Ministry of Textiles, The Clothing Manufacturers Association of India (CMAI) and IMG Reliance.

SU.RE stands for 'sustainable resolution' — a five-point agenda for the industry to move towards fashion that contributes to a clean environment. The signatories to this are 16 of India's top fashion and retail brands: Aditya Birla Fashion and Retail, Arvind Fashions, Bestseller, Biba, Future Group, House of Anita Dongre, 109F, Lifestyle, Levis, Max, Raymond, Shoppers Stop, Spykar, W, Trends, and Westside. The signatories have pledged to source and utilise a substantial portion of their total consumption using sustainable raw materials and processes, by the year 2025.

Sustainability in apparel is difficult to achieve because of the complexity of the textile supply chain, both with regards to the production of material goods and to that of immaterial content and brand values. From the cultivation of fibers, through to weaving, tailoring, sewing and retail practices, each phase is exposed to significant risks, whether it is damage to the environment or to the health and welfare of workers. Sustainability is an issue that concerns a product's whole life cycle, from its production, to its maintenance and disposal.

Thus, it is imperative for organizations to measure the sustainability performance of their supply chains. The aspect of measurement is important since a common adage suggests that what gets measured gets improved. Measurement will thus help in improving and communicating the sustainability related performance of a supply chain. (Saeed and Kersten 2017).

The importance of the measurement indicators of sustainability practices in supply chain management mentioned by Swami et.al. (2019) after reviewing the extant literature.

Aswani and Swami (2017) have studied, in Indian context, the frequency of environmental phrases that occur in the sustainability reports of companies across Automotive, Conglomerate, Food and Beverage and Personal and Household sectors and report that firms have emphasized on issues related to emissions, pollution and climate change.

It can be observed that much of the sustainability reporting broadly covers key issues faced by firms. The similar issued needs to be investigated and addressed for apparel industry.

Although manufacturers play a major role in ensuring the environmental sustainability by the apparel industry, the role of designers and consumers cannot be under estimated. Rather a symbiotic relationship should necessarily emerge between the three entities, namely Manufacturers, Designers and Consumers to ensure overall environmental goodness of the industry.

1.5 ROLE OF DESIGNER IN CREATING SUSTAINABLE FASHION

As sustainability takes more and more meanings, young and established designers find new ways of approaching it. Initiatives go beyond production, distribution, marketing, and recycling practices and seek to revolutionize how we buy and use clothes and for how long. To change patterns of consumption and use from the very core, a fundamental change needs to take place.

To achieve sustainable development, designers need to be aware of environmental impacts and incorporate environmental awareness into the design. Transforming product sustainability may be achieved via various aspects such as fiber/textile selection, processing methods, use behaviors, and reuse/recycle strategies. Fiber/textile selection is often the first step that designers and product developers will take in reducing the environmental impact of a garment. Environmentally preferred fibres /textiles can significantly reduce the environmental impact and increase the resourcefulness of an apparel product throughout the garments life cycle without change to design practice or product development processes.

Several studies (Armstrong &Le Hew, 2011; Bhamra et al. 2007; Curwen et al. 2013; Lawless & Medvedev, 2016) have highlighted that decisions made during the design stage have substantial impact on the entire lifecycle of clothing, including material selections, fibre and textile production, garment manufacturing, distribution, marketing, consumer use and end-of-product disposal behaviour of consumers. Designers can support the reduction of negative environmental and social effects by shaping consumers' behaviour (Lilley, 2009).

1.6 CONSUMERS MOTIVATIONS AND PERCEPTIONS ON SUSTAINABLE APPAREL

Shopping today is much more than just buying; it is an experience itself. Consumers now value convenience and choice as well as getting value for their hard-earned money. Motivation is where consumption starts, where it all begins, with the acknowledgement of a need. While clothing has been classified as a basic human need, for many people, clothing choices are motivated by their need for identity and esteem (Maslow,1943), (Max-Neef, 1992). Some of the main factors which motivate consumer to purchase are as follows-

(a) Values or Motives

Shopping values or motives are often divided into *utilitarian and hedonic* values for describing shopping's rewards. Hedonic and utilitarian shopping values propose that consumers are guided by two different shopping conditions. The hedonic shopping value suggests that consumers shop to seek value according to pleasure, recreational consumption and high-arousal stimuli (Alba and Williams, 2013). Conversely, the utilitarian shopping value views consumers as more efficient and rational, and they shop with a focus on task completion or objective or utility. Products have both hedonic and utilitarian features which develops consumers preference.

Depending on the type(s) of shopping values, young adult consumers might have a positive or negative attitude towards shopping for sustainable fashion. If the consumer is dependent on others 'opinions, subjective norms will strongly relate to shopping values. Furthermore, alternative hedonist' perspective posits that sustainable consumption gives both moral satisfaction and hedonic pleasure and may be encouraged by a wish for a special experience of choosing different consumption practices (Soper et. al., 2007).

(b) Knowledge

Knowledge can be divided into subjective and objective knowledge. Subjective knowledge refers to how confident an individual is in his or her knowledge. Objective knowledge is only what the individual actually knows (Brucks,1985). Brucks (1985) states that both types of knowledge likely play a role in

consumers 'decision-making behavior. These two types of knowledge play into an individual's level of confidence when making purchasing decisions.

Knowledge can have a role in sustainable consumer behaviour, for apparels. If consumers are more aware about the impact of their clothing, then they could be more likely to make sustainable purchases (Kang et. al., 2013). Hiller Connell's (2010) research has also shown that consumers can enhance their sustainable fashion consumption decisions if they know more about how a garment was produced, how long was the supply chain, and what is the environment impact in terms of the "carbon footprints" as well as where to purchase sustainable apparel.

The present study seeks to answer the question whether consumers' values and knowledge predict their behavioural intentions to engage in sustainable apparel consumption.

There is a new segment of retail consumers called the "Green Consumers," who are mindful of the environmental and social impact of their material consumption and take proactive steps to reduce these negative impacts through their purchasing power and every day actions. The consumers now are starting to become aware of the importance of protecting the environment by purchasing textile products and apparels that can be recycled (Sonnenberg et.al., 2016).

According to the International Institute of Sustainable Development, the most responsive age group is young adults who are often influenced by their children and women who tend to make purchasing decisions on behalf of men. (IISD, 2013) In addition, the general view of green consumers is that they typically have a higher level of education and intellectual orientation to appreciate value and can make educated assumptions and decisions in support of environmental claims. It is common to see green consumers distrusting companies' environmental claims unless they have been independently verified. Several studies have been conducted on consumer perspectives regarding sustainable clothing (DEFRA, 2008; Fisher et al., 2008; Jorgensen et. al., Saicheua et al., 2012).

This is particularly the case with most Indian consumers. Hence, this research study is planned to evaluate the mindset and perceptions of Indian consumers with respect sustainability, environmentalism and buying of sustainable apparel.

1.7 NEED AND JUSTIFICATION OF THE STUDY

Apparel is a billion-dollar industry employing millions of people, not only in emerging economies, but across the globe. The fast fashion trend or over consumption of clothes comes at the cost of natural environment. The apparel industry is the world's second largest contaminator of the natural environment and is also responsible for 10% of the total carbon emissions around the globe (Forbes, 2015).Even worse is the fact that if people go on consuming the products at the current level, then to meet the ecological necessities of the globe, five more planets just like our Earth are needed (McGregor, 2007). Because of this dilemma, sustainability has become the centre of debate for the popular press, and also for the academicians (Hustvedt, 2006).

Apparel industry has become more diverse by sustainable apparel brands, personalization, advertisement and ethnicity in the global marketplace. If consumers' preferences can be identified by manufacturers and retailers of sustainable apparel, they can better attract and maintain their target consumer group.

Consumers may face numerous ethical dilemmas when contemplating an apparel purchase, such as trying to balance personal needs with the greater good of the environment and society. Given that not all apparel purchase decisions include ethical considerations, it is important to determine which factors may encourage consumers to make sustainable apparel consumption choices. Thus, the purpose of the present study is to investigate the dimension of apparel shopping values among consumers.

This thesis focuses on the current global environmental, social and economic issues in the Indian apparel industry. In addition, the current state of sustainability in Indian apparel companies will be evaluated. Sustainability in business world has gained increased popularity and has become basically a driving trend. The reason behind this is that people are now aware of, for example, human rights, conditions in clothing factories, environmental challenges and how those issues will affect the future of the globe, economies and societies. Consumers nowadays have a lot more information than couple of decades ago. Due to increased awareness of sustainability, it has become a requirement for a business world.

In her book, *Sustainable Fashion and Textiles: Design Journeys*, Fletcher (2008) points out that as the interest in sustainability continues to grow, there is an increased initiative to understand more about the issues related to sustainability in the textile and apparel industry.

Sustainability in the apparel industry has gained prominence from business practices and academic research. The interest in this area has increased lately, mainly due to the growing complexity within this dynamic context. This study aims to identify the main perspectives of research on sustainable outcomes in the view of apparel consumer. There is a lack of research on sustainable consuming in the apparel consumer in the developing market (Born et. al. 2014).

Till date, relatively scant research is available which has investigated consumers' attitudes and perceptions regarding sustainable apparel or involvement of apparel industries in sustainable activities, particularly in the Indian context. The lack of research in these areas warrants further investigation to determine the behavioral antecedents of consumer intentions and knowledge towards sustainable apparel. Literature review revealed a significant research gap in Indian context of consumer's attitudes and its antecedent towards Environmentally Sustainable Apparels. The purpose of this research study is to examine the awareness level of consumers' environmental concern, knowledge level of the impact of textile and apparel industry on the environment and investigates the influence of these on consumers' attitude towards environmentally sustainable apparels. Thus, based on the above lines, this research has been planned to cater to these issues, with the following objectives.

1.8 STATEMENT OF THE PROBLEM

"SUSTAINABILITY IN INDIAN APPAREL INDUSTRY: AN ANALYSIS FROM THE PERSPECTIVE OF CONSUMERS AND DESIGNERS"

1.9 OBJECTIVES OF THE STUDY

The objectives of this study are as follows:

1. To perform sustainability analysis of selected apparel industries for their contribution to sustainability responsiveness.

2. To study the environmental concerns, perceptions, attitudes of Indian apparel consumers and designers towards environmentally sustainable apparels.

3. To identify the challenges and drivers to practicing sustainable apparel design.

4. To formulate educational modules to sensitize youth regarding sustainability and its importance.

5. To design and create sustainable apparel products considering the product design and creativity parameters, as a part of participatory action research.

1.10 OPERATIONAL DEFINITIONS

- **Fast fashion** - inexpensive or cheap clothing that is considered fashionable. It is characterized by high-speed production and consumption (Joy et al., 2012).
- **Slow fashion -** an alternative business model to fast fashion. Its focuses are on the value of local resources, transparent production, and sustainable and sensorial products. The consumer should think of the garment as an investment and choose to repair it rather than to dispose of it (Clark, 2008).
- **Sustainability -** meeting the needs of the present without compromising the needs of the future generations (World Commission on Environment and Development-Brundtland Report, 1987).
- **Sustainable consumption -** an "umbrella term" that combines meeting needs, improved quality of life, increasing use of renewable energy sources, minimizing waste, and looking at the entire product lifecycle (Oslo Round Table on Sustainable Production and Consumption, 1994).
- **Sustainable Apparel Product -**The sustainable apparel product refers to fabrics derived from eco-friendly resources, such as sustainably grown fiber crops or recycled materials. it also refers to how these fabrics are made.

2.0 REVIEW OF LITERATURE

Review is the process of reading, analyzing, evaluating, and summarizing scholarly materials about a specific topic. A literature review is a text, written by researchers to consider the critical points of current knowledge including substantive findings, as well as theoretical and methodological contribution to a

topic. Thus, for the present study, few representative literatures are compiled based on a range of variables, included in this study.

2.1 SUSTAINABILITY IN APPAREL INDUSTRY

Desore & Narula (2018) presented an overview on corporate response towards sustainability issues in textile industry. The authors classified the literature to discuss the drivers, barriers, and responses of firms in the textile industry in favour of sustainability.

Vaidya (2016) investigated that the textile and fashion industry is one of the biggest and oldest industrial sectors in the world. The textile and fashion industry has its place second to the oil industry, as the most polluting industry in the globe. The future challenge to the fashion industry is to understand the threats and take appropriate action to safeguard its future, protect the environment and improve the lives of its customers, workers and suppliers around the world.

Edgeman et al. (2015) identify the reported indicators in corporate sustainability reports, other documents and the web sites of 14 apparel brands belonging to the Sustainable Apparel Coalition (SAC). Most of the indicators dealt with performance in supply-chain sustainability while the least frequently reported indicators addressed business innovation and consumer engagement.

Gupta and Hodges (2012) explored the perceptions of Indian consumers regarding corporate social responsibility (CSR) in the apparel industry, and its importance in the apparel decision-making process.

Lee & Hill (2012) explored consumers' actual knowledge and sentiment towards sustainability and environmental issues Findings show a low level of knowledge of the holistic principle of sustainability and specific adverse effects of the apparel industry.

2.2 CONSUMER BEHAVIOR

Taquet (2016) in his study revealed that the hedonic considerations shape human behavior. They may explain how humans overcome the allure of short-term gains in happiness to maximize long-term welfare.

Amsrtong (2015) revealed that consumers had highest level of interest in clothing take-back, swaps, repair, redesign, and consultancy. Their positive perceptions included environmental benefits and

emotional aspects while, lack of trust in the service provider and perceived barriers to ease of use were the negative aspects perceived by the consumers.

Weijers (2012) investigated that the subjective well-being could be used to allow policymakers to consider the potential impacts of a policy on the happiness as well as the wealth of citizens.

Abhigyan Sarkar (2011) investigated the individual buyer's perceived benefits and risks in e-shopping are influenced by his or her perceived utilitarian or hedonic shopping values.

2.3 SUSTAINABLE/ ETHICAL APPAREL

Jalan (2018) studied, globally textile companies have also started introducing latest innovations in sustainable segment and are launching products that are made out of environment friendly products like organic cotton, cotton or using waste products like PET bottles, plastic bags, rugs and many more.

Mukherjee (2015) examined that ethical fashion requires collaboration between designers, manufacturers and consumers to adequately address the impact of production processes and consumption patterns.

Choi et al. (2012) examined the relationship between ethical fashion and consumer purchase behavior (their willingness to pay a premium for ethical fashion), with the focus on consumers' concerns and beliefs about, and knowledge of ethical fashion.

According to Siegle (2011) fast fashion firms meet the demand of consumers with low prices and new weekly product offerings, which quickly fall apart or become outdated, pushing quantity demand up while pulling prices down.

Connell (2010) Results indicate that consumers find it difficult to engage in eco-conscious apparel acquisition on a consistent basis because a number of barriers stand in the way. A taxonomical view of literature review in the area of sustainability and its classification is presented in the Table no.2.1 and Figure no. 2.1 respectively.

Content										
		Sustainability in apparel industry			Consumer behavior			Fast fashion & Sustainable fashion		
S. no.	Researcher	Apparel industry	Sustainable apparel development	Annual report	Hedonic value	Utilitarian value	Shopping motivation	Limitation	Solutions/ prevention	Implementation/ acceptance
1	Embuldeniya, A	✓		✓						
2	Edgeman, R			✓	✓					
3	Jayamaha, A	✓		✓	✓	✓				
4	Chi, T	✓			✓	✓				
5	Anbanandam, R	✓		✓	✓	✓				
6	Mann, M			✓	✓	✓				
7	Fletcher, K	✓		✓						
8	Tewari, M	✓		✓						
9	Curwen, L		✓			✓				
10	Armstrong, C		✓		✓	✓				
11	Vadicherla, T		✓		✓	✓				
12	Gam, H		✓		✓	✓				
13	Keiser, S		✓							
14	Curwen, L		✓	✓	✓					
15	Bhardwaj, V				✓	✓		✓	✓	
16	Sull, D				✓	✓			✓	✓
17	Barnes, L				✓	✓		✓		✓
18	Joy, A				✓	✓		✓	✓	
19	Cachon, G							✓		✓
20	Tokatli, N								✓	✓
21	Yu, C				✓					
22	Carpenter, J				✓	✓				
23	Ottar Olsen				✓	✓				
24	Sarkar, A				✓	✓				
25	Jackson, V				✓	✓				
26	Sirakaya-Turk				✓	✓				
27	Ribeiro Cardoso				✓	✓	✓			
28	Kang, J						✓			
29	Goldsmith, R						✓			
30	Patel, V						✓			

Table2.1: A taxonomical view of Literature Review in the area of Sustainability

3.0 RESEARCH METHODOLOGY

Methodology is a systematic and logical analysis to the research problem. It is a science of studying problem to carry out scientific solutions. For any research, plan of action needs to be formulated as a blue print which is known as research design. As Liehr & Smith (2003) reported that the investigator understands plans and explores the best practice which may be appropriate to the specific problem. This section will highlight the procedure that will be followed by investigator to achieve the objectives of the research.

The study will be accomplished under four phases which are elaborated and shown in the figure below:

3.1 Phase I

Exploratory

3.2 Phase II

Descriptive phase

3.3 Phase III

Intervention phase

3.4 Phase IV

Participatory phase

3.1 EXPLORATORY PHASE

Analysis and Evaluation of Sustainability efforts by Apparel Companies/Retailers/ brands

The initial part of research consisted of assessing apparel companies, brands or retailers on the sustainability strategies and practices followed. Information regarding the sustainable strategies and practices communicated by the companies through written reports like sustainability reporting of the last two years, other research articles published in journals and industry magazines relevant to these companies, will be examined

3.2 DESCRIPTIVE PHASE

This phase will be divided into 2 parts.

(a) Analysis of Designers view on Sustainability issues

Semi-structured key informant interviews will be conducted online or in offline mode with variety of experts and designers in the field of apparel design to reflect the experiences and insights and perspectives on sustainability issues in this area.

(b) Analysis of Consumers perceptions awareness on Sustainability and Role of values and Knowledge consumers motivations to buy sustainable apparels

Three different self-constructed Questionnaires will be prepared to collect information. The standardized scales/tools will be adapted as per the objectives of the study.

At the beginning of the survey, a definition of on sustainable/organic clothing (Niinimaki, 2010) will be provided. Online and off-line versions of the tool will be administered as per the availability of the respondent.

3.3 INTERVENTION PHASE

This phase is an important part of this research as it focuses on evaluating the awareness and knowledge of the young future consumers of our county related to sustainability its importance, and its role in protecting or destroying our environment.

- **Preparation of educational modules:**

The educational module will be created based on the literature review, result of the survey reports of the apparel companies, apparel consumers, designers and experts in this field.

- **Post-Intervention phase:**

The process of research is incomplete if the exploration and experimentation techniques carried out for sustainability awareness is not methodically evaluated. Thus, after imparting the knowledge through various educational modules prepared, the change in their level of awareness and acceptance towards sustainability will be evaluated through a series of questions formulated.

3.4 PARTICIPATORY PHASE

An experimental participatory fashion workshop will be conducted for this action-based research. First a literature review will be undertaken to investigate the models and frameworks covering sustainable product design strategies for fashion apparel..

The sustainable apparel products created in this phase will be evaluated for their originality, usefulness and aesthetic appeal.

4.0 SAMPLING PLAN

LOCALE OF THE STUDY: The locale of the study will be Agra and NCR regions in offline mode.

SAMPLE SIZE: The total sample size will be of 650 respondents distributed in four different phases of the research. The details of the sample size are shown in Figure no. 13

Phase III Respondent consumers in the age group 20-30 years who had already participated in the survey, will be randomly selected.

Phase IV The participants in Stage III will be selected on the basis of their caliber and skill development.

5.0 STATISTICAL ANALYSIS

- **DEVELOPMENT OF TOOLS:**

Two types of self-constructed tools i.e. assessment and informative will be used to fulfill the research objectives are as follows: Self constructed assessment tools will be used for domains wise assessment. The assessment tools will be prepared in the form of schedule and questionnaire. Self-constructed informative tools will be used for imparting awareness regarding sustainability issues. The informative tools will be prepared in the form of pamphlets, leaf lets, booklets, audio visual aid etc according to the requirement of content.

- **STATISTICAL DESIGN:**

The information collected through research tools will be analyzed and interpreted with the help of various statistical tools. It will be used according to type and requirement of data obtained.

6.0 DELIMITATIONS OF THE STUDY

- The study will be conducted only on selected Apparel companies/Brands and Designers.
- Agra and NCR regions will only be selected for survey in offline mode.
- Respondents from only one age-group (20-30 yrs) will be selected for Intervention phase.
- An attempt would be made to create only 50 sustainable apparel products during the proposed research study.

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